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ABSTRACT

Outlined are physiological and psychological values of swimming for the handicapped, basic principles and teaching procedures for instructing physically handicapped persons, and specific suggestions for teaching swimming to persons with the following conditions; amputations, polio, paraplegia, cerebral palsy, spina bifida, Legg-Perthes Disease, muscular dystrophy, arthritis, hemiplegia, and scoliosis. Brief sections on facilities, equipment, and teaching aids are included. (LS)

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SWIMMING FOR THE HANDICAPPED CHILD AND ADULT

By

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To my wife, GENIE, and my son, DAVID LOUIS, for their patience and understanding without which this article would not be published.

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I wish to express my deepest appreciation to the thousands of beautiful people I have been affiliated with in my work in rehabilitation, wheelchair sports, and therapeutic recreation.

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L.N.

INTRODUCTION

No physical activity but swimming calls upon the simultaneous use of every muscle in the body. An attempt to do scientific swimming strokes tends to increase range of motion, calls for control of body movement with rhythmical motions, and promotes deeper breathing. Although it is important that swimming skills always be taught by a trained instructor, it is especially important for the handicapped. While skills self-taught can prevent drowning, movements can be crude, exhausting, and lacking in efficiency.

Swimming affects the handicapped person positively in many ways. It gives him a sense of independence he is unable to achieve otherwise. With swimming goes fun and socialization with others. In water, physical deformities become less obvious. However, a physically handicapped person should have a medical doctor's permission to swim before starting a swim course.

In teaching swimming, the instructor should keep the safety of his student in mind at all times. This is particularly true in teaching the handicapped because, in many cases, the student has to rely on his instructor for support. Therefore, the instructor must be ever alert to see that his pupil is comfortable and safe. Whenever possible, the student should be taught to be independent of his instructor and to come to a resting position without help.

The optimum results in teaching handicapped persons to swim can be obtained by having one instructor work with one student. A good method is to let the instructor supervise a group of aides, each of whom is responsible for a student. Good results will be obtained when an instructor can go from student to student, giving suggestions to the aides. Quite often the aide will accomplish things that the instructor cannot see. Rapport is a very important factor in the total results achieved in teaching a handicapped person to swim. There must be a combination of dependency and independency, which the instructor must transfer through contact.

PHYSIOLOGICAL VALUES

1. **Develops or maintains organic strength and vigor**

   (a) Skills selected for handicapped individuals that will enable them to use the affected part and *possibly* prevent further atrophy of the area.

2. **Increases movement within the joints**

   (a) Persons with stiff joints are sometimes surprised to find that in the water their range of motion, as well as a painless arc of movement, is increased. The water serves as a cushion to support the joint, thus reducing the weight of that part of the body. The pressure within the joint structure is minimized; consequently, there is a reduction in pain with movement and more range of motion.

3. **Improves circulation**

   (a) A handicapped person usually has a balance problem, which eliminates most types of exercise, but a swim program in proper doses will enable the individual to obtain optimal results.

4. **Promotes deeper breathing**

   (a) Pressure of water causes a person to breathe deeper than usual, which strengthens the chest muscles.

5. **Sedative effects**

   (a) Feeling of relaxation and desire to sleep is induced by warm water—82 degrees to 88 degrees; feeling of exhilaration by cool, clear water—74 degrees to 82 degrees.

PSYCHOLOGICAL VALUES

A. Results are apparent. A handicapped individual who learns to swim will develop a feeling of satisfaction, which will relate to his developing healthier feeling toward his own condition.

B. Carry-over value. Many handicapped individuals who have been afraid of water have, after learning how to swim (some even accomplishing a 50-mile swim program), gained tremendous self-confidence that has carried over into their total rehabilitation.

C. Swimming is fun.

D. Swimming offers an opportunity for success and socialization. There are no social barriers in the water, and the handicapped person is on a keel nearly even with the non-handicapped person. The handicap itself is less apparent in water.

UNDERSTANDING THE HANDICAPPED

A. The instructor who is sincere tries to understand his students. He does not give pity, but establishes an underlying closeness that is essential to development of any rapport. Remember, the handicapped person wants to be treated the same way the instructor wants to be treated. His desires and emotions are usually the same as those of the instructor. Remember to plan programs to meet the needs of all. After you discover your pupils' personalities, their disabilities will fade into the background.

SOCIAL APPROVAL

This is the crux of our movement. The handicapped child or adult has been stereotyped to the point of personality maladjustment due to society's lack of education of the handicapped person's total being, wants, and needs. We, as physical educators and recreation instructors, must promote integrated programs involving handicapped and non-handicapped persons. Until we accomplish this, there will be a barrier. We must correlate our efforts with those of others in the community and capitalize on contributions possible through support of mass media, including radio, TV, and newspapers.

The swim instructor can do much to modify his own feelings of self-consciousness by regarding persons with handicaps in his swim class as he would "normal" persons.

TEACHING THE HANDICAPPED INDIVIDUAL

A. The instructor will be successful in his work with the handicapped if he has initiative, imagination, and patience. Remember the adage that "nothing succeeds like success." Plan your program with challenges and add variety to your procedures.

B. The three basic problems will be:

1. Making the necessary physical and mental adjustment to water,
2. Maintaining a good position in the water, and
3. Practicing sufficiently in this position to establish a pattern of movement.

C. Remember to use all your flotation devices for any person with a balance problem and physical limitations.

D. Basic Safety Skills

1. Breath control (mouth breathing, breathholding, and rhythmic breathing)
2. Prone float and recovery
3. Back float and recovery
4. Turning over
5. Changing directions
6. Entry to and exit from the water.

Other Principles Involved

The physically handicapped child should be encouraged to be as independent as possible in undressing and dressing for swimming and getting to and from the pool. This is our biggest contribution toward total rehabilitation; let's not defeat the objective.

Remember to strive for discipline; to be not too demanding or too harsh, but to emphasize a goal. The instructor should be very explicit in his land drills and water demonstrations, imparting a visual knowledge of the prescribed techniques.

Remember to repeat the movements daily to establish clockwork in good habits.

For relaxation, try music during practice sessions.

It is a good idea to continually motivate the student to goals set before the beginning of the course. Keep activities pleasant. Encourage all to work harder, but be careful of exerting too much pressure.

SWIMMING INSTRUCTION FOR THE PHYSICALLY HANDICAPPED

I. First Phase

A. Physical and mental adjustment to water

1. Bob in water, face in water

2. a. Hold breath
   b. Blow bubbles
   c. Open eyes underwater

II. Second Phase

A. Developing skills

1. Buoyancy and body position

2. Prone float

3. Selection of good body position

   a. Learn at least one manageable position.
   b. Stand on knees, hands on bottom of pool

4. Learn jelly-fish float

5. Back float

6. Recovery from back float to resting position

7. Back glide, if possible

III. Third Phase

A. Propulsive movement

1. Sculling
2. Human stroke
3. Dog paddle

IV. Fourth Phase

A. Coordinated stroking

1. Crawl
2. Breaststroke
3. Backstroke
4. Elementary backstroke

V. Fifth Phase

A. Technical aspects using isometrics and resistance

1. Using isometric straps for legs, strap child to wall and observe closely all phases taught
2. Use parachute-type resistance to strengthen arms and chest and to develop greater confidence and ability

VI. Warm-up Period before Entry

A. Using flexible dumbbells, have children go through series of calisthenics to develop group control and preparation for drill

B. Land drill of lesson plan

Other Teaching Suggestions

1. Look for signs of chilling and fatigue.
2. Keep the fun in the activity.
3. Avoid long and tedious drills.
4. Use flotation devices to assist whenever indicated.
5. Ensure the safety of the swimmer at all times.

SWIMMING STROKES FOR SPECIFIC DISABILITIES

Generally speaking, the elementary backstroke is the easiest stroke to learn.

AMPUTATION

Precautions in Teaching:

Check carefully for open sores; watch closely for ability to come to safe resting positions.

1. Remember for double amputees to encourage strokes with underwater recovery. If possible, place a platform in the water for use in resting phase by double amputees, specifically those with amputations above the knees.
2. The scissors kick is more effective than breaststroke kick for single amputees.
3. Persons who have lost both legs will modify the position of their body while swimming the sidestroke and the breaststroke. When doing the breaststroke, the swimmer should drop one shoulder in order to permit the face to be turned to one side. This will enable him to obtain air more easily. Sidestroke will be partially on the front and partially on the side.
4. For double amputees, the gliding phase of the sidestroke will be much shorter; consequently, the gliding phase for the breaststroke will be shortened, and the outward sweep of arms will be reduced to semi-circles.

POLIOMYELITIS

A disease affecting cells in the the spina cord, which in turn destroys the nerve impulse in certain muscles. Residual effects of polio are varied; if nerves are not completely destroyed, there will usually be a certain amount of recovery. The psychological effect on children will be greatly determined by parental influence and individual behavior that existed before polio was contacted.

Values of Swimming:

1. Many movements impossible to do on land are possible in water due to a decrease in body weight, which enables weakened muscles to perform work with less effort.

2. The massaging effect of water increases blood supply

Precautions:

Swimming may be contraindicated for persons who have been confined to respirators. While teaching, care should be taken not to allow water in the mouth of those having faulty breathing apparatus.

Teaching Suggestions:

1. Teach all the parts of a complete skill whenever possible.

2. Individuals with involved neck muscles will probably have to use an excessive roll of the body in order to obtain enough air while swimming the crawl stroke in a prone position.

3. Individuals with involved shoulder muscles may have to resort to an excessive roll while attempting to recover the arms when swimming the crawl stroke in a prone position.

4. Take advantage of resistive and assistive qualities of water, E.G., assist weak knee extensors in their work by recommending swimming on back using flutter kick.

Benefits:

A person may be very severely disabled physically and yet be able to swim; he may be confined to a wheelchair but become very independent in the water. Post-polio patients with quadriplegia have become very adept swimmers, some even swimming competitively on an international basis (Paralympics).

PARAPLEGIA

Paralysis of both legs caused by a disease or injury to the spinal cord. Some persons with paraplegia have little or no bowel or bladder control. The muscles may be flaccid (toneless) or spastic (in contraction) depending on areas of the nervous system damaged.

Psychological Aspects:

It is my belief that social and emotional factors have not been delved into explicitly. A paraplegic may tend to look to others for support to the point of becoming completely dependent. Recreation personnel can greatly influence the paraplegic to accept his disability with reality.

Teaching Suggestions:

1. The paraplegic may learn almost all strokes and recoveries; increasing endurance is the major goal.

2. Teach each person the safest method of entering water as determined by his condition. Foam rubber mats filled with waterproof material can be used to transfer the paraplegic from wheelchair to mat to water.

3. Develop a safe but independent method for the paraplegic to get out of water.

4. Be extremely careful for decubiti (pressure sores).

5. Remember to gear methods to well-developed shoulder and arm muscles.

6. For a paraplegic, strokes with an underwater recovery are best; a paraplegic has no difficulty floating on his back, so backstrokes are easy for him to learn.

7. Some paraplegics can develop a good back butterfly.

8. In the face-down position, the breaststroke is the stroke preferred.

9. Keep the fun in all activities—plan water basketball, water volleyball, and other such game and sports.

CEREBRAL PALSY

Cerebral palsy is a neurological disorder resulting from damage to the brain before, during, or after birth. Control of the muscles is lost or impeded, ranging in degree from mild to severe. Three general groups of cerebral palsy are:

A. Spastic. The largest group—involving damage to the cerebrum, which controls voluntary movements. Inactive muscles should relax, but fail to do so.

B. Athetoid. Next-to-largest group. Muscles are normal but make involuntary movements. A person in this group cannot seem to control motion of lips, tongue, or trunk. The condition ranges from mild to severe.

C. Ataxic. Inability to maintain directional control and balance, may stagger when walking. A person in this group appears quite normal when sitting or lying down.

Psychological Aspects:

An important factor in a child's rehabilitation is parental understanding and the realization that improvement will come if emphasis is placed on capabilities. Remember that the child with cerebral palsy has the same desires and ambitions that other children have and that he craves the same affection.

1. **Precautions for spastics:**

   May have great fear of falling; should have quiet (music is good to promote relaxation). Be utmost alert to the spastic's fear of water.

   Benefits:

   Must relax to learn to swim.
   Can learn to float, which will help overcome fear.

2. **Precautions for athetoids:**

   Usually does not fear water; sometimes will extend head to side or back while doing elementary backstroke and head will go under water. Instructor should be very observant.

   Benefits:

   Sometimes when placed in deeper water, the athetoid will execute progress not shown in shallow water.

3. **Precautions for ataxics:**

   Has less fear of water and is usually daring. Be careful the ataxic doesn't suddenly go into deep water. Balance is a major problem; consequently, a basic stroke should be taught to facilitate any movements.

   Benefits:

   Swimming will help coordination somewhat.

Values of Swimming for Cerebral Palsied:

1. Outlet for physical and emotional tensions.
2. Learning to swim is good for the morale and the ego.
3. Overcoming fear of water may help in overcoming other fears.
4. Neuromuscular efficiency may be improved through learning of swimming skills—an improvement that may carry over.

Skills to be Taught:

1. Teach basic skills first.
2. Easiest stroke is on back: Sculling, finning, winging, legs in flutter kick.

3. Keep strokes under water except for those exceptional persons having good buoyancy.

Teaching Suggestions:

1. Teach breath control as soon as possible.
2. Use flotation devices for positioning and pattern of movement.
3. Don't hurry.
4. Avoid splashing.
5. Keep student in chest-deep water until able to swim.
6. Watch ataxic when he tries to regain balance while rising from supine position.

SPINA BIFIDA

A congenital defect of the spinal canal, often affecting strength and movement of the legs as well as bowel and bladder control.

Precautions and Benefits:

Same as for paraplegia.

LEGG-PERTHES

Ball of femur loses blood supply and deteriorates. Weight should be kept off leg.

Precautions:

No diving, no weight bearing on feet or knees.

Benefits:

Muscles in legs may be developed by swimming. No weight on hip joint is required.

MUSCULAR DYSTROPHY

Several types of this disease; generally, muscle tissue is replaced by fat, with resulting loss of strength.

Precautions:

Watch for tiredness.

Because persons with M.D. are unable to cough, be careful to prevent water from going into mouth.

Be aware that persons with the disease are usually susceptible to respiratory infections.

Benefits:

Confinement of many to wheelchairs can lead to dependency; the independent effect of swimming can help physiologically as well as psychologically and may possibly delay progression of the disease.

ARTHRITIS

Joints of the body are inflamed; may become enlarged and painful to move, causing a loss of range of motion.

Precautions:

Watch for tiredness.

Watch for difficulty arthritic may display in recovering to a resting position from the back float.

Benefits:

Swimming may be sedative, possibly decrease pain. May increase range of motion.

HEMIPLEGIA

Half-paralysis; the weakness that occurs to one side of the body, most often following a cerebral vascular accident.

Skills to be Taught:

1. Work on sidestroke.
2. Tread water.
3. Try back and breaststrokes.

Teaching Suggestions:

A hemiplegic should breathe over his weak shoulder in swimming the crawl stroke. He can possibly learn to swim the sidestroke with the good or heavy side down if he can develop a good scissors or if he has good buoyancy. In order to swim in a straight line while swimming on his back, he may have to turn his head in the desired direction. Do two or more strokes with weak arm to one stroke with strong arm.

SCOLIOSIS

Lateral curvature of the spine.

Teaching Suggestions:

Use sidestroke.

Lie on side of concavity with arm of that side maintained in overhead stretch position.

FACILITIES

1. Deck should be close to surface of water.

2. Deck structure should be wide enough to permit passage of two wheelchairs. Slightly raised edges will minimize danger of chairs slipping into the water.

3. Conditions of water should be tested and approved by local health authorities. It should be clear, making it not only more inviting, but also safer, than dark water.

4. Level of water should be shallow for crawling area and increase progressively up to 8 feet.

5. Bottom of pool should be skid proof.

6. It is best if the water can be heated from 85 degrees to 90 degrees F. and the air heated to a few degrees higher.

7. If possible, install ramp that leads a person in a wheelchair directly into the water.

8. Railings in the shower room can give the handicapped person grasp and insure against falling.

9. The dressing room should have padded benches for handicapped persons to use while dressing. A flat table with sufficient room will ease the work of dressing students who need help with braces and clothes.

10. Safety measures—area markers, reaching poles, ring trays—should be available and easily accessible.

EQUIPMENT

1. Resting platforms: Install small benches at bottom, along sides, of pool in shallow end (especially for double amputees).

2. Devices for getting children in and out of water: Electric lift, sliding board, and swing have been developed and used successfully.

3. Use your imagination to create equipment as needed.

TEACHING AIDS

1. Flotation devices for correct body position: Water wings, rubber tubes, inflatable vests, swim trunks with built-in air pockets, the new-type bathing suits (with built-in flotation support). Use only under supervision of instructor.

2. Swim fins and swim mitts add enjoyment and will increase resistance to arms and legs as they are moved through the water.

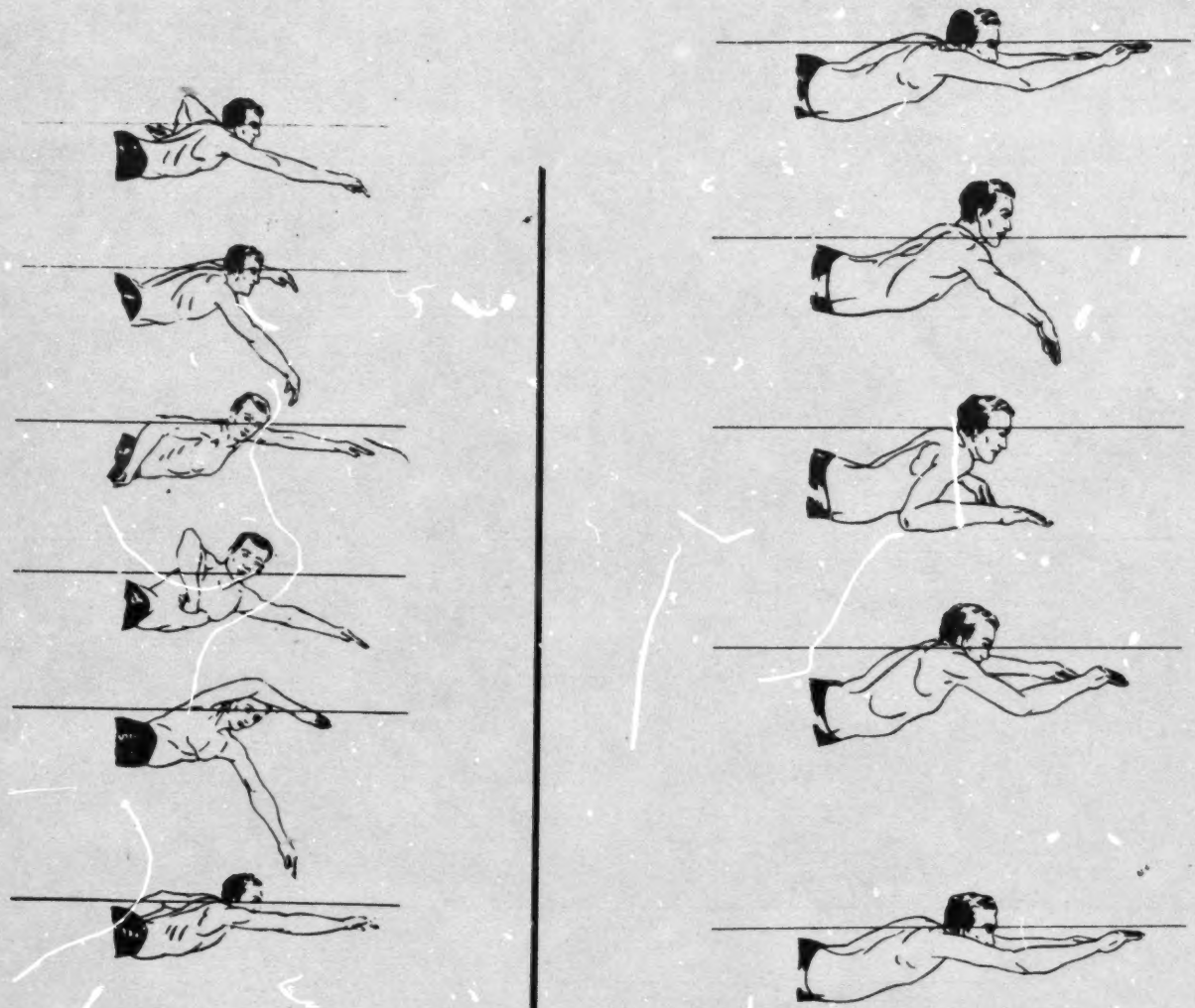
3. Swim goggles and face mask for those who fear to place face in water, also for joy of underwater swimming.

4. Kick boards for use as teaching and learning device.

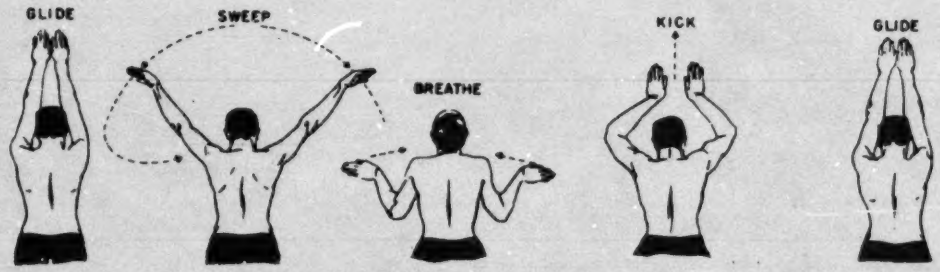
5. Nose clips for difficulty in controlling breathing.

6. Bathing cap will keep hair out of eyes and face.

Swimming strokes can be adjusted to be beneficial and recreational for any type of disability. Only the keen analysis and imagination of the instructor are needed to develop a worthwhile swim program.



Crawl.



Breaststroke